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**AAO Foundation**

**Final Report Form**

**(REVIS**

**ED**

**12/20/20**

**19)**

**(a/o 5/31/2017)**

Please prepare a report that addresses the following:

Type of Award,      Biomedical Research Award

Name(s) of Principal Investigator(s)      John Burnheimer, Robert Weyant

Title of Project      Disparities in orthodontic health in Southwestern Pennsylvania

Period of AAOF Support (e.g. 07-01-18 to 06-30-19): 07-01-18 to 12-31-2019

Amount of Funding      \$30,000

Summary/Abstract of Completed Project Results (250 word maximum)

Our sample consisted of 60 children (29 females, 31 males) ages 7-10 years of predominately Caucasian (56/60) ethnicity. The results of the study indicate that there is no statistical relationship between the need for orthodontic treatment (as measured by IOTN) and demand for orthodontic services in patients aged 7 to 10 years old from rural Southwestern Pennsylvania. This suggests that parents recognize the need for braces at this early age and this is in line with the need as determined by the IOTN.

Eighty percent reported no trouble in getting dental care for their child and fully 98% reported either state, private or other dental insurance for their child. This would emphasize the importance of dental insurance as a factor in obtaining dental care for children in this age group.

Response to the following questions:

1. Were the original, specific aims of the proposal realized?

The first aim was to characterize the occlusal status of children in the mixed dentition in rural Southwestern Pennsylvania.

The second aim was to identify factors that create barriers to care.

Yes. We accomplished the first aim by examining 7 to 10 year-old children who receive care in rural Southwestern Pennsylvania. The Dental Health Component (DHC) of the Index of Orthodontic Treatment Need (IOTN) was used to quantify the normative need for orthodontics treatment. The IOTN uses five categories: Grade 1 (no need); Grade 2 (little need); Grade 3 (borderline need); Grade 4 (great need); Grade 5 (very great need). This index has demonstrated reliability and validity (Shaw et al., 1991) <https://www.ncbi.nlm.nih.gov/pubmed/2007067>.

Table 1. Participant's Demographic Information (n=60)

Variable	N (%)
Gender	
Girls	29 (48)
Boys	31 (52)
Age	
7	14 (23)
8	19 (32)
9	15 (25)
10	12 (20)
Race	
White	56 (93)
African American	2 (3)
Hispanic	1 (2)
Asian	1 (2)
Angle's Classification	
1	34 (57)
2	26 (43)

Table 2. IOTN frequency (combining 4&5)

IOTN	Freq.	Percent	Cum.
1	8	13.33	13.33
2	27	45.00	58.33
3	11	18.33	76.67
4+	14	23.33	100.00
Total	60	100.00	

In this age group of 7 to 10 year old children, we found 58.33% (IOTN 1&2) with little or no need for treatment and 41.67% (IOTN>3)with a borderline or greater need for orthodontic treatment.

Additionally, we accomplished the second aim by asking parents of participating children to complete a questionnaire adapted from Center for Oral Health Research in Appalachia study, COHRA. The instrument asks parents to report on their family’s access to and utilization of dental care, as well as their assessment of their child’s dental health. Almost all children had dental insurance and were able to obtain dental care suggesting that finances were not a barrier to care.

Table 3. IOTN versus parental demand for braces

IOTN	Parental Demand			Total
	Yes	No	DK	
1	1	2	5	8
	12.50	25.00	62.50	100.00
	3.03	20.00	29.41	13.33
2	14	5	8	27

		51.85	18.52	29.63		100.00
		42.42	50.00	47.06		45.00
-----+-----+-----						
3		7	1	3		11
		63.64	9.09	27.27		100.00
		21.21	10.00	17.65		18.33
-----+-----+-----						
4+		11	2	1		14
		78.57	14.29	7.14		100.00
		33.33	20.00	5.88		23.33
-----+-----+-----						
Total		33	10	17		60
		55.00	16.67	28.33		100.00
		100.00	100.00	100.00		100.00

Fisher's exact = 0.073

We found no significant difference between IOTN and parental demand for orthodontic treatment.

This indicates that the parents recognize the need for braces at this early age.

### Logistic Regression

Logistic regression  
 57  
 29.94  
 0.0000  
 0.3810

Number of obs =  
 LR chi2(6) =  
 Prob > chi2 =  
 Pseudo R2 =

Log likelihood = -24.321579

-----+-----+-----  
 -----  
 doh9\_2 | Odds Ratio Std. Err. z P>|z| [95%  
 Conf. Interval]  
 -----+-----+-----  
 -----

doh8\_2 | 38.7763 37.66353 3.77 0.000  
 5.778189 260.2201

iotn3		2.363873	1.76356	1.15	0.249
.5477565		10.20142			
age		.9282394	.334209	-0.21	0.836
.4583404		1.879887			
_Imf_2		1.506861	1.131693	0.55	0.585
.3457785		6.566721			
_Idoh7_2_1		.962545	.8562348	-0.04	0.966
.1683574		5.503132			
_Idoh7_2_2		.2862582	.305712	-1.17	0.241
.0352947		2.321701			
_cons		.5628245	1.793536	-0.18	0.857
.0010911		290.316			

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The biggest predictor of whether a parent thinks the child needs braces is if the dentist recommended braces for the child. The odds of the parent thinking their child needs braces is 39 (95% CI 5.8-260.2) times higher if the dentist recommended braces compared to those when the dentist didn't recommend braces.

2. Were the results published? The results were not published. According to Fisher's exact test, the results were not significant (=0.073). With so few responses in certain categories, it is difficult to draw conclusions from this data, and the study would most likely not be accepted for publication.
3. Have the results of this proposal been presented? The results have not been presented. Perhaps, the study would be of interest as a poster presentation at the AAO Annual Session.
4. To what extent have you used, or how do you intend to use, AAOF funding to further your career? AAOF funding has allowed me to build a network of colleagues who have similar interests in the Public Health Area relating to orthodontic care. I have been able find a mentor with experience in Dental Public Health who has guided me during the Award time period.

Accounting for Project; i.e., any leftover funds, etc. In summary: Total Amount Spent: \$27,643.70; Leftover funds: \$2,356.30 to be returned.